

AMENDMENTS TO THE SPECIFICATION

Please replace page 1, lines 8-10 with the following:

When in operation motors generate heat that must be dissipated in order to prevent the motor from overheating. This is particularly true when smaller motors are used to generate large amounts of power because as the more power that is generated, the hotter the motor becomes.

Please replace page 2, lines 1-5 with the following:

By directing the flow of cooling air around the motor as opposed to directly through its interior, inefficient cooling results as the warmest part of the motor fails to contact the cooling air. This results in the motor operating at a warmer temperature. Because of this inefficiency, a cooling system that directed cooling air directly into the center of the motor would be an important improvement in the art.

Please replace page 3, line 17-page 4, line 7 with the following:

As shown in FIGURES 1 and 2, the invention involves a cooling system for providing cooling air (as indicated by arrow A) for a motor 24 having a shaft 25 extending through an opening 54 within the motor 24, the motor 24 is contained within a vacuum cleaner housing 14 having a top 16 and a bottom 18 and the cooling system is comprised of a cooling-air inlet 12 located in a side of the vacuum cleaner housing 14, a motor housing 30 integral with the vacuum cleaner housing 14, the motor housing 30 having a top portion 31 defining a hole 33 passing therethrough, the hole 33 being in flow communication with the cooling-air inlet 12 and having a first dimension-~~41~~, a side wall 35 surrounding the hole 33 and extending from the top portion 31 of the motor housing

30. Cooling air A flows from ~~motor housing 30~~ cooling-air inlet 12 through interior of side wall 35. Baffle 37 which circumscribes motor 24 has a second dimension ~~d2~~ that is greater than the first dimension ~~d1~~ of hole 33 which enables the directing of cooling air A to pass through the opening 54 in the motor 24 adjacent the shaft 25 with at least a portion of the motor 24 positioned within the side wall 35. Cooling-air exhaust outlet 20 located in the side of the vacuum cleaner housing 14 is in flow communication with the motor housing 30 and spaced apart from and in flow communication with the cooling-air inlet 12.

Please replace page 4, lines 8-11 with the following:

In particular, the invention involves a vacuum cleaner cooling system wherein the cooling-air inlet 12 extends generally parallel to the bottom 18 along at least a partial length of the side of the housing 14. Cooling-air exhaust outlet 20 extends generally parallel to the bottom 18 along at least a partial length of the side of the housing 14.

Please replace page 4, lines 12-15 with the following:

As shown in FIGURE 5, the motor 24 used in conjunction with the inventive cooling system is, for example, an AC motor comprised of a field 55 surrounding a stator 56 that includes a set of windings 53 and a rotor 59 that includes a shaft 25 on which a second set of windings 57 are connected.

Please replace page 4, lines 16-21 with the following:

In one embodiment of the invention, the dimension of the hole 33 and baffle 37 are diameters. In another embodiment, as shown in FIGURES 1 and 2, the motor shaft 25 has a first end attached to a cooling fan 52 and a second end attached to an impeller 41.

A motor mounting platform 43 is secured to the bottom 45 ~~of the motor housing 30~~ and, when the motor 24 is attached to the platform 43, the motor 24 is spaced apart from the mounting platform 43, as shown in FIGURE 2.

Please replace page 4, line 22-page 5, line 7 with the following:

In still another embodiment of the invention, the ~~vacuum cleaner 10~~ has a housing 14 ~~that~~ includes an upper portion 22 that contains a motor or power unit 24 and a ~~bottom~~ lower portion 26 that may, for example, serve as a collection canister. The upper portion 22 is divided into a top and a bottom part 28, 30 and the cooling-air inlet 12 is formed in between the lower portion 26 and the bottom part 30 of the upper portion 22 while a cooling-air exhaust outlet 20 is located in the upper portion 22, in particular, between the top 28 and bottom 30 parts of the upper portion 22. In a more specific version of this embodiment, the bottom part 30 of the upper portion 22 is the motor housing. As shown in FIGURES 3 and 4, edge 32 and 46 may overhang a portion of both the cooling-air exhaust 20 and the cooling-air inlet 12, respectively.

Please replace page 5, lines 8-12 with the following:

In one embodiment of the invention, the bottom 45 ~~of the motor housing 30~~ serves as a divider between the upper and lower portions 22, 26 of the vacuum cleaner housing 14. This bottom 45 ~~of the motor housing 30~~ includes a working-air intake (not shown) that extends from an opening 49 in the sidewall of the vacuum cleaner housing 14 ~~motor housing 30~~. When in operation, a hose or attachment is connected to the vacuum cleaner 10 via the opening 49 of the working-air intake.

Please replace page 5, line 20-page 6, line 4 with the following:

In yet another embodiment, the cooling-air exhaust outlet 20 may be formed by securing the top part 28 of the upper portion 22 to the bottom part 30. In such an embodiment, the top part 28 of the upper portion 22 of the vacuum cleaner housing 14 is circumscribed by a bottom edge 32, and when the top part 28 and the bottom part 30 of the upper portion 22 are joined together, the bottom edge 32 of the top part 28 extends beyond a top edge 34 60 of the bottom part 30, ~~as~~ as shown in FIGURE 3, thereby forming the cooling-air exhaust outlet 20. In a specific version of this embodiment, the bottom edge 30 32 of the top part 28 overhangs the top edge 34 60 of the bottom part 30.

Please replace page 6, lines 5-13 with the following:

As shown in FIGURES 2 and 3, the cooling-air exhaust outlet 20 may also include a bottom portion 34 that is angled inwardly and in a ~~direction~~ direction toward the top 16 of the vacuum cleaner housing 14. In an embodiment where the cooling-air exhaust outlet 20 does not extend along the entire length of the housing 14, the angling of the bottom portion 34 forms a channel 38 along the cooling-air exhaust outlet 20. A plurality of ribs 40, as shown in FIGURE 1, may be ~~position~~ positioned in channel 38 and be spaced apart along the length of the channel 38 to aid in the distribution of airflow. The angling of the bottom portion 34 of the cooling-air air exhaust outlet 20 inwardly and in a direction toward the top 16 of housing 14 allows the exhaust air to be directed downward and away from the vacuum cleaner housing 14.

Please replace page 6, lines 14-19 with the following:

The bottom portion 34 of the cooling-air exhaust outlet 20 may be connected to a platform 42 in the upper portion 22 of the vacuum cleaner housing 14. In a more specific version of this embodiment, the platform 42 is the top portion 31 of the motor housing 30 and the bottom portion 34 of the air exhaust outlet 20 is integral with the platform 42 in the upper portion 22 of the vacuum cleaner housing 14. Such a platform 42 may separate the top and bottom parts 28, 30 of the upper portion 22 of the vacuum cleaner housing 14.

Please replace page 6, line 20-page 7, line 6 with the following:

FIGURES 2 and 4 show a particular embodiment of the invention wherein the cooling-air inlet 12 includes a bottom ~~portion~~ surface 44 that is angled inwardly and in a direction toward the top 16 of the housing 14. This arrangement ensures that cooling air A drawn into the vacuum cleaner housing 14 is directed upward toward the top of the motor 24. Air inlet 12 may also be formed by the mating of the upper portion 22 of the vacuum cleaner housing 14 with the lower portion 26. In such an embodiment, the bottom part 30 of the upper portion 22 is circumscribed by a bottom edge 46, the lower portion 26 of the vacuum cleaner 10 is circumscribed by a top edge 48 and the bottom edge 46 extends outwardly beyond the top edge 48 thereby forming the air inlet 12, as shown in FIGURE 4. In a more specific version of this embodiment, the bottom edge 46 overhangs the top edge 48.

Please replace page 7, line 16-page 8, line 2 with the following:

As shown in FIGURE 2, when in operation, a fan 52 attached to the power unit or motor 24 draws cooling air A into the vacuum cleaner 10 through the cooling-air inlet 12

that is formed in the side of the housing 14. The angled bottom surface 44, as seen in FIGURE 4, of the air inlet 12 causes the air A to be directed upward toward the top portion of the ~~motor housing~~ bottom part 30. Because, the baffle 37 circumscribing the motor 24 prevents any cooling air A from escaping the ~~motor housing~~ bottom part 30 around the outside of the motor 24, all of the cooling air A is channeled up and inside the armature through the opening 54 in the motor 24. This flow pattern causes the cooling air A to come in direct contact with the windings 53, 57 and the armature located inside the motor 24, as seen in FIGURE 5.

Please replace page 8, lines 3-10 with the following:

By passing in contact with these components, the cooling air A draws heat off the motor 24. After passing through the motor 24, the air A is drawn through the top portion 31 of the motor housing 30 into the top part 28 of the upper portion 22 of the vacuum cleaner housing 14 where it is exhausted downward through the cooling-air exhaust outlet 20 and away from the vacuum cleaner 10. Because both the cooling-air inlet 12 and cooling-air exhaust outlet 20 are located along the side of the vacuum cleaner housing 14, the inner workings of the vacuum cleaner 10 are protected in that no foreign substance (i.e., water or other impurities) can enter the inside of the housing 14 while the vacuum cleaner 10 is in operation.